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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,296	06/07/2001	Ryoichi Yamamoto	W-2723 (07250001AA)	4660
6449	7590	03/17/2004	EXAMINER	
ROTHWELL, FIGG, ERNST & MANBECK, P.C. 1425 K STREET, N.W. SUITE 800 WASHINGTON, DC 20005			BROOKE, MICHAEL S	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/875,296	<b>Applicant(s)</b> YAMAMOTO ET AL.	
	<b>Examiner</b> Michael S. Brooke	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 9-15 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-4 and 9-15 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 07 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The corrected or substitute drawings were received on 03/10/03. These drawings are not accepted. Fig. 8 is identified in the specification as "conventional art" and has been labeled as "prior art". Figs. 9A-9C are also identified in the specification as illustrating the conventional art. Accordingly, these figures should be labeled as "prior art" or "conventional art."

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hock (5,450,109).**

With respect to claims 1 and 9, Hock teaches an ink jet printer having a head body including: a plurality of orifices in an array, a substrate having a plurality of ink ejection units (16), each of which corresponds to an orifice, a plurality of flow paths (23), each of which supplies ink to an orifice, a common flow path (25) that extends across the head and that has a portion extending through the substrate and a metal nozzle plate

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formed on the upper surface of the barrier layer (19) (col. 4:19-25). The nozzle plate is a metal film that is formed on at least one side of the head body.

With respect to claims 2 and 10, the nozzle plate contains nickel as a main component.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 2, 4, 9, 10, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Usui et al. (6,074,040).**

With respect to claims 1 and 9, Usui teaches (Fig. 14) an ink jet printer having a head body including: a plurality of orifices (71) in an array, a substrate (2) having a plurality of ink ejection units (91), each of which corresponds to an orifice, a plurality of flow paths (81), each of which supplies ink to an orifice, a common flow path (83) that extends across the head and that has a portion extending through the substrate (8 and 9) and a metal nozzle plate (7) formed on the upper surface of the barrier layer (19) (col. 4:19-25). A nozzle plate (7) has a nickel film with a thickness of 0.2 microns formed thereon (col. 12:65-67, claims 2 and 24).

With respect to claims 2, 4, 10 and 12, a nozzle plate (7) has a nickel film with a thickness of 0.2 microns formed thereon.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3, 9, 11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art (AAPA) in view of Nagahata et al. (5,335,002).**

The AAPA teaches an ink jet print head for a printer comprising a head body (150) having a plurality of orifices (20) that extend substantially across the head, a plurality of ejection units (see p. 2:15) corresponding to each orifice, a plurality of individual flow paths formed by partition walls (15) and a least one common ink flow path (16) that extends substantially across the head. An ink supply bore hole (18) is bored on a side opposite the orifices and supplies ink to the at least one common flow path. As can be seen in Fig. 8, the thickness of the head body is substantially equal to the thickness of the wafer that formed the head body. The substrate would be substantially inflexible, as silicon is a substantially inflexible element. Furthermore, it is clear that the substrate has sufficient thickness to include the various claimed head structures.

The AAPA teaches the claimed invention with the exception of a metal film at least on a part of at least one side of the head body.

Nagahata et al teaches (Fig. 6) a substrate (2) for a print head that has a metal reinforcing layer (18) that is formed on the underside of the substrate. The metal reinforcing layer functions both as a heat sink and to strengthen the substrate against breakage (col. 8:44-48). Nagahata further teaches the reinforcing layer may be used in any type of printing head (col. 4:23-25).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have provided the AAPA with a metal film at least on a part of at least one side of the head body in order to strengthen the substrate, as taught by Nagahata. Furthermore, it would have been obvious to one of ordinary skill in the ink jet art to pattern the reinforcing layer to allow for ink inlets or any other openings that are required for the operation of the print head.

**Claims 2, 4, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Nagahata et al. (5,335,002), as applied to claims 1, 3, 9, 11 and 12 above, and further in view of Gaynes et al. (6,197,619).**

The AAPA, as modified teaches the claimed invention with the exception of the layer being made of Ni and the layer having a thickness of 0.1 microns to 0.9 microns.

Gaynes et al. teaches a method of reinforcing a semiconductor device by applying a Ni layer (107) having a thickness of 0.1 microns to 4 microns (col. 3:23-29). providing such a layer prevents cracking due to warping or mechanical loading by reinforcing the surface of the device (col.1:56-60). Gaynes further teaches the

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equivalence of nickel and aluminum for the purpose of forming a semiconductor substrate reinforcing layer.

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have provided the AAPA, as modified, with a Ni film having a thickness of 0.1 to 0.9 microns for the purpose of reinforcing the device to prevent cracking due to warping or mechanical loading, as taught by Gaynes et al.

### ***Response to Arguments***

Applicant's arguments filed 12/22/03 are not persuasive.

Applicant's argument concerning the restarting of the time period is not persuasive. It is not clear how the Applicant was prejudiced by the Office Action mistakenly being labeled as "Final," as the Applicant would still have prepared the same arguments. Furthermore, the Applicant had sufficient time to produce a lengthy and detailed response to the Office Action, so again it is unclear as to why the Applicant needs the action to be remailed. If the Applicant disagrees, then the Applicant should submit a Petition.

The Applicant's argument with regard to the Drawings is not persuasive. The Examiner acknowledges that the description of the figures states that they are views of the present invention and the conventional ink jet recording head. The key language is that they represent what is conventional. The drawings do not illustrate any novel feature of the claimed invention. Rather, they merely illustrate those aspects of the

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invention that are conventionally known in the ink jet art. Accordingly, the objection is maintained.

Applicant's arguments against the prior art are deemed moot in view of the new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is (571) 272-2142. The examiner can normally be reached on M-F from 5:30 AM-2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael S. Brooke  
Examiner  
Art Unit 2853

MSB  
03/05/04